Amendments to the Specification

On page 5, paragraph 5:

~~These and other objects of the present invention are achieved in a photonic device with a silicon semiconductor based superlattice. The superlattice includes a plurality of layers that form a plurality of repeating units. At least one of the layers in the repeating unit is an optically active layer with at least one species of rare earth ion.~~

These and other objects of the present invention are achieved in a structure. The structure includes a silicon based superlattice with a plurality of layers that form a plurality of repeating units. At least one of the layers is an active region layer with at least one rare earth ion. At least a portion of the superlattice is made of substantially a Group III-V or II-VI material.

In another embodiment of the present invention, a structure is provided for efficient excitation or de-excitation mechanisms of a crystal field engineered rare-earth silicon-based superlattice. A silicon semiconductor based superlattice is provided that includes a plurality of layers which form a plurality of repeating units. At least one of the layers is an optically active layer with at least one species of rare earth ion. A first layer of semiconductor material is included. A second layer of semiconductor material is also provided. The superlattice is sandwiched between the first and second layers. The first and second layers each have a wider bandgap than the superlattice.

On page 24, after paragraph 3 and before paragraph 4:

In one embodiment of the present invention, a structure is provided includes a silicon based superlattice with a plurality of layers that form a plurality of repeating units. At least one of the layers is an active region layer with at least one rare earth ion. At least a portion of the superlattice is made of substantially a Group III-V or II-VI material.

In another embodiment of the present invention, a structure is provided for efficient excitation or de-excitation mechanisms of a crystal field engineered rare-earth silicon-based superlattice. A silicon semiconductor based superlattice is provided that includes a plurality of layers which form a plurality of repeating units. At least one of the layers is an optically active layer with at least one species of rare earth ion. A first layer of semiconductor material is included. A second layer of semiconductor material is also provided. The superlattice is sandwiched between the first and second layers. The first and second layers each have a wider bandgap than the superlattice.